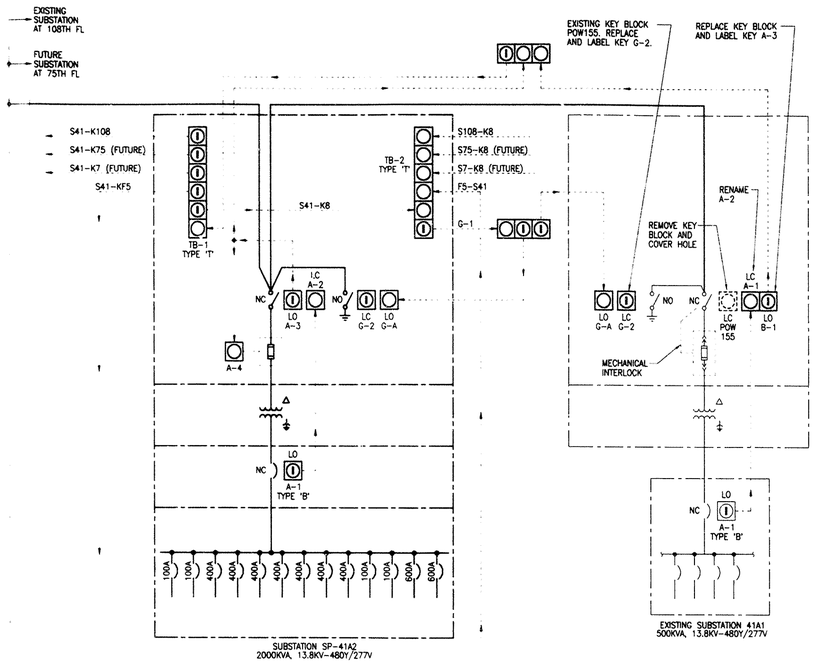
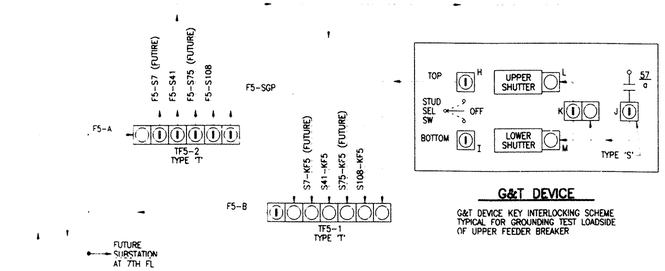
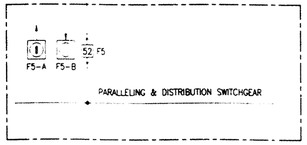




G&T DEVICE

G&T DEVICE KEY INTERLOCKING SCHEME TYPICAL FOR GROUNDING TEST LOADSIDE (IF UPPER FEEDER BREAKER



SUBSTATION SERVICING PROCEDURE FOR SUBSTATIONS SP-41A1 AND SP-41A2

A. TRANSFORMER TAP CHANGING, MAINTENANCE AND/OR TESTING

1. OPEN SUBSTATION MAIN SECONDARY BREAKER.
2. TURN KEY A-1 TO LOCK THE BREAKER OPEN. REMOVE KEY A-1
3. INSERT KEY A-1 INTO LC INTERLOCK A-2 ON PRIMARY INTERRUPTER SWITCH AND TURN TO UNLOCK THE SWITCH.
4. OPEN THE INTERRUPTER SWITCH AND LOCK IT OPEN BY TURNING KEY A-3.
5. REMOVE AND SECURE KEY A-3. (POCKET KEY IF NECESSARY)
6. PERFORM VOLTAGE CHECK AT TRANSFORMER TERMINALS USING PORTABLE VOLTAGE INDICATOR.
7. WHEN THE VOLTAGE CHECK HAS CONFIRMED A DE-ENERGIZED TRANSFORMER, GROUND THE TRANSFORMER TERMINALS WITH A PORTABLE GROUNDING SET.
8. CHANGE TRANSFORMER TAP TO DESIRED TAP SETTING AND/OR PERFORM MAINTENANCE/TESTING AS NECESSARY.
9. AFTER SERVICING IS COMPLETE IN STEP 8, REMOVE PORTABLE GROUNDING SET AND REVERSE STEPS 1 THROUGH 5 TO RESTORE SERVICE.

B. ACCESS TO FUSE COMPARTMENT

1. OPEN SUBSTATION MAIN SECONDARY BREAKER.
2. TURN KEY A-1 TO LOCK THE BREAKER OPEN. REMOVE KEY A-1
3. INSERT KEY A-1 INTO LC INTERLOCK A-2 ON PRIMARY INTERRUPTER SWITCH AND TURN TO UNLOCK THE SWITCH.
4. OPEN THE INTERRUPTER SWITCH AND LOCK IT OPEN BY TURNING KEY A-3.

   NOTE 1: FOR SUBSTATION 41A2, CONTINUE WITH STEPS 5 THRU 8.

   NOTE 2: FOR SUBSTATION 41A1, POCKET KEY A-3 AND CONTINUE WITH STEPS 7 AND 8. (SUBSTATION 41A1 FUSE DOOR IS MECHANICALLY INTERLOCKED WITH INTERRUPTER SWITCH).
5. REMOVE KEY A-3 AND INSERT IT INTO FUSE COMPARTMENT DOOR INTERLOCK A-4.
6. TURN KEY A-3 TO UNLOCK FUSE COMPARTMENT. KEY A-3 IS NOW HELD CAPTIVE.
7. OPEN FUSE COMPARTMENT DOOR AND REPLACE FUSE(S).
8. REVERSE SEQUENCES TO RESTORE SERVICE.

GROUNDING 15KV RISER – FEEDER 'F5'

A. GROUNDING FEEDER 'F5' AT SUBSTATION SP-41A2 – USING GROUND SWITCH

1. OPEN 15KV CIRCUIT BREAKER 52/F5 AND REMOVE IT FROM CUBICLE AT THE STANDBY GENERATOR PLANT.
2. TURN KEY 'F5-A' AT THE BREAKER CUBICLE AND REMOVE THE KEY. (INTERLOCK BOLT IS NOW EXTENDED WHICH WILL PREVENT INSERTION OF ANY BREAKER INTO THE CUBICLE BUT WILL NOT INTERFERE WITH THE INSERTION OF G&T DEVICE).
3. INSERT KEY 'F5-A' INTO TRANSFER BLOCK 'TF5-2' AT THE GENERATOR PLANT AND TURN KEY TO RELEASE KEYS 'F5-S7', 'F5-S41', 'F5-S75', F5-S108' AND 'F5-SGP'
4. TAKE KEY 'F5-S41' TO SUBSTATION SP-41A2 AND INSERT IT INTO TRANSFER BLOCK 'TB-2'
5. OBTAIN KEY 'S108-K8' AND KEYS 'S7-K8', 'S75-K8' (FOR THE FUTURE SUBSTATIONS) FROM THE KEY BOX (SEE NOTE-1) AND INSERT THEM INTO TRANSFER BLOCK 'TB-2'
6. OBTAIN KEY 'S41-K8' (SEE PROCEDURE BELOW), AND INSERT IT INTO TRANSFER BLOCK 'TB-2'

   STEPS FOR OBTAINING KEY 'S41-K8' AT SUBSTATION SP-41A2

   a. OPEN 480V MAIN BREAKER AND LOCK IT OPEN BY TURNING KEY A-1
   b. INSERT KEY A-1 INTO LC INTERLOCK A-2 ON THE PRIMARY INTERRUPTER SWITCH AND UNLOCK SWITCH BY TURNING KEY A-1
   c. OPEN THE INTERRUPTER SWITCH AND LOCK IT OPEN BY TURNING KEY A-3. KEY A-3 IS NOW FREE
   d. INSERT KEY A-3 INTO TRANSFER BLOCK 'TB-1' AND TURN THE KEY. KEYS S41-KF5, S41-K7, S41-K75, S41-K108 AND S41-K8 ARE NOW FREE.
7. TURN KEYS F5-S41, S7-K8, S75-K8, S108-K8 AND S41-K8 IN THE TRANSFER BLOCK 'TB-2'. KEY G-1 IS NOW FREE
8. REMOVE KEY G-1. KEYS F5-S41, S7-K8, S75-K8, S108-K8 AND S41-K8 ARE NOW HELD CAPTIVE
9. INSERT KEY G-1 INTO THE LO INTERLOCK 'G-A' ON GROUND SWITCH AND TURN TO UNLOCK THE GROUND SWITCH
10. CLOSE THE GROUND SWITCH. FEEDER F5 IS NOW GROUNDED AT SUBSTATION SP-41A2.
11. LOCK GROUND SWITCH CLOSED BY TURNING KEY G-2
12. REMOVE AND SECURE KEY G-2. (POCKET KEY IF NECESSARY)
13. REVERSE SEQUENCES TO RESTORE SERVICE.

(SEE CONTINUATION AT TOP RIGHT, PARAGRAPH 'B')

B. GROUNDING FEEDER 'F5' AT STANDBY GENERATOR PLANT – USING G&T DEVICE

1. FOLLOW STEPS 1 THROUGH 3 DESCRIBED ABOVE IN "GROUNDING FEEDER 'F5' AT SUBSTATION SP-41A2 – USING GROUND SWITCH" AND OBTAIN KEY 'F5-SGP' FROM TRANSFER BLOCK 'TF5-2' AT THE GENERATOR PLANT.
2. OBTAIN KEY S41-KF5 FROM SUBSTATION SP-41A2 (SEE PROCEDURE BELOW).

   STEPS FOR OBTAINING KEY 'S41-KF5' AT SUBSTATION SP-41A2.

   a. OPEN 480V MAIN BREAKER AND LOCK IT OPEN BY TURNING KEY A-1
   b. INSERT KEY A-1 INTO LC INTERLOCK A-2 ON THE PRIMARY INTERRUPTER SWITCH AND UNLOCK SWITCH BY TURNING KEY A-1
   c. OPEN THE INTERRUPTER SWITCH AND LOCK IT OPEN BY 1TURNING KEY A-3. KEY A-3 IS NOW FREE
   d. INSERT KEY A-3 INTO TRANSFER BLOCK 'TB-1' AND TURN. KEYS S41-KF5, S41-K7, S41-K75, S41-K108 AND S41-K8 ARE NOW FREE
3. OBTAIN KEYS S108-KF5 AND S7-KF5, S75-KF5 FOR THE FUTURE SUBSTATIONS FROM KEY BOX AT THE GENERATOR PLANT (SEE NOTE#2).
4. OBTAIN KEY 'H' FROM THE GROUND AND TEST (G&T) DEVICE AFTER SETTING UP THE G&T DEVICE FOR INSERTION INTO BREAKER F5 CUBICLE (SEE BELOW FOR G&T SET UP PROCEDURE).

   G&T DEVICE SET UP PROCEDURE FOR INSERTION INTO BREAKER F5 CUBICLE:

   a. CHECK AND CONFIRM THAT PRIMARY DISCONNECTS ARE NOT MOUNTED TO ANY OF THE TOP OR BOTTOM STUDS
   b. SET THE COMPARTMENT POSITION LEVER TO "UPPER" POSITION
   c. INSERT HANDLE AND MOVE THE SELECTOR SWITCH TO "TOP" POSITION
   d. INSTALL PRIMARY DISCONNECTS ONTO THE THREE TOP STUDS
   e. LOCK THE SELECTOR SWITCH IN TOP POSITION BY TURNING KEY 'H' AND REMOVE THE KEY
5. INSERT KEYS F5-SGP, S7-KF5, S41-KF5, S75-KF5, S108-KF5 AND 'H' INTO THE TRANSFER BLOCK 'TF5-1' AT THE GENERATOR PLANT.
6. TURN KEYS F5-SGP, S7-KF5, S41-KF5, S75-KF5, S108-KF5 AND 'H' KEY F5-B' IS NOW FREE.
7. INSERT KEY 'F5-B' INTO BLOCK 'F5-B' AT THE FEEDER BREAKER F5 CUBICLE AND TURN THE KEY TO RETRACT THE INTERLOCK BOLT. THE G&T DEVICE CAN NOW BE INSERTED INTO THE BREAKER CUBICLE.
8. TURN THE CONTROL TRANSFER SWITCH ON THE G&T DEVICE TO "RIP POSITION.
9. MANUALLY TRIP THE G&T DEVICE, AND REMOVE THE CONTROL TRANSFER HANDLE.
10. INSERT THE G&T DEVICE INTO THE BREAKER CUBICLE AND RACK IT IN COMPLETELY.
11. INSERT THE CONTROL SWITCH HANDLE ON TO THE G&T DEVICE AND TURN IT TO 'CLOSE' POSITION.
12. CLOSE THE G&T DEVICE FROM THE LOCAL CONTROL CABINET.
13. INSERT KEY 'J' INTO BLOCK 'K' AT THE G&T. POCKET KEY 'K'. THE G&T DEVICE IS NOW LOCKED CLOSED.

NOTES

1. KIRK KEYS 'S7-K8' AND 'S75-K8' FOR THE FUTURE SUBSTATIONS SHALL BE FURNISHED NOW, AND STORED IN A LOCKED KEY BOX AT SUBSTATION 108-E2, FOR IMPLEMENTING THE PRESENT GROUNDING SCHEME
2. KIRK KEYS 'S7-KF5' AND 'S75-KF5' FOR THE FUTURE SUB-STATIONS SHALL BE FURNISHED NOW, AND STORED IN A LOCKED KEY BOX AT STANDBY GENERATOR PLANT, FOR IMPLEMENTING THE PRESENT GROUNDING SCHEME.
3. THREE (3) KEY INTERLOCK BLOCKS SHALL BE INSTALLED IN THE 15KV BREAKER CUBICLES AS FOLLOWS:

   a. INTERLOCK 'F5' SHALL BE INSTALLED ON THE BREAKER RACKING MECHANISM. THE PURPOSE OF THIS LOCK IS TO PREVENT THE BREAKER FROM CLOSING IN THE 'TEST' AND 'CONNECT' POSITIONS, WHEN NEEDED.
   b. INTERLOCK 'F5-A' SHALL BE INSTALLED SUCH THAT WHEN THE INTERLOCK BOLT IS EXTENDED BY TURNING THE KEY, IT SHALL INTERFERE WITH THE BREAKER RATING PLATE AND PREVENT BREAKER FROM RACKING INTO THE CUBICLE. HOWEVER, THIS SHALL NOT PREVENT THE RACKING OF G&T DEVICE INTO THE CUBICLE
   c. INTERLOCK 'F5-B' SHALL BE INSTALLED SUCH THAT WHEN THE INTERLOCK BOLT IS IN THE EXTENDED POSITION, IT SHALL INTERFERE WITH THE RATING PLATE OF THE G&T DEVICE AND PREVENT IT FROM INSERTION INTO THE CUBICLE. HOWEVER, THE EXTENSION OF THE BOLT SHALL NOT PREVENT THE RACKING OF BREAKER INTO THE CUBICLE

THE PORT AUTHORITY OF NY & NJ

ORIGINAL SIGNED BY JERROLD DINKELS
ENGINEERING PROGRAM MANAGER
WORLD TRADE

ORIGINAL SIGNED BY JACK BUCHSBAUM
CHIEF ELECTRICAL ENGINEER

No.	Date	Revision	Approved
1	2-2-01	AS BID	

ENGINEERING DEPARTMENT

WORLD TRADE CENTER

ELECTRICAL
Title

TENANT STAND-BY POWER SYSTEM
SUBSTATIONS SP-41A2, SP-7B

SUBSTATION SP-41A2 KEY INTERLOCK SCHEME

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AVENOSO	AVENOSO	A.SENIOR
Designed by	Drawn by	Engineer

Date DECEMBER 8, 2000

Contract Number WTC-945.083

Drawing Number E5